

a. m., the trough stretched from eastern Nebraska to Lake Superior, but at 4:35 p. m. the pressure had rapidly filled up on its western sides, where an area of high barometer then appeared, and the low pressure, like its predecessor, stretched as a series of slight depressions from Kansas to Lake Huron. At 11 p. m. of the 18th, the isobar of 29.90 extended from Indian Territory to the Gulf of St. Lawrence, very much as was the case at 11 p. m. of the 15th, and the only low pressures were in northern Canada, beyond the limit of our stations, where, however, they apparently continued to progress eastward, giving rise to the low pressure that prevailed over Newfoundland on the 19th.

No. VIII.—The barometer was low on the 19th over California, Oregon and Rocky Mountain stations, while high pressure No. VII was over the Lake region. Low pressure No. VIII appears to have been central in western Dakota at 11 p. m. on the night of the 19th; commenced to move slowly to the ENE. on the 20th, and, at 11 p. m., was central north of Lake Huron. The northerly winds that followed it were accompanied by extensive heavy rains, which, on the same date, prevailed over lower Michigan, Wisconsin, Illinois, Iowa and the lower Missouri valley. This region of heavy rains lay in the rear of and on the SW. side of the region of lowest pressure, but on the northern limit of the region of fresh southerly winds. The succeeding weather map, June 21st, 7:35 a. m., shows that this area of rains had moved eastward to the Lower Lake region, while the area of low pressure had extended rapidly southward, and during the rest of the day covered the Middle and East Atlantic States. The 7:35 a. m. report of the 22nd shows that heavy rains had fallen over the Middle Atlantic States wherever the cooler NW. winds had replaced the warm southerly winds of the preceding morning, and therefore under circumstances precisely similar to those that accompanied the heavy rain of 11 p. m. of the 20th in Iowa, Wisconsin, &c. After 11 p. m. of the 21st the pressure fell rapidly over Maine and the Canadian Provinces, and the area of lowest pressure disappeared over the Gulf of St. Lawrence on the 22nd.

No. IX and X.—This extensive but indefinite area of low pressure No. IX was developed on the 22d, over the Rocky Mountain region, and on the 23rd extended southward from Manitoba into the Missouri valley. During the 23rd, 24th and 25th, the central lowest pressure probably moved eastward through Northern Canada, while there was visible within the region covered by our western stations only the southern extremity of the extensive trough of low pressure; near the southern extremity of this trough there originated on the 24th, a series of severe local storms, which are fully described on p. 7. During the 26th, the area of falling barometer extended eastward into the Middle States, and the numerous local rains and storms that prevailed over the Ohio valley, the Northwest and Lake region, were followed by a decided rise in pressure and cooler northwest winds. At 11 p. m., on the 26th, the lowest pressure was over Penn., and at 7:35 a. m. on the 27th, it was off the Middle Atlantic coast. At this time pressure was nearly uniformly lowest, although not very low, from the Middle Atlantic coast westward to Kansas, and during the rest of the day, a slight depression developed over the Middle Atlantic States, while the pressure rose both northeast and northwestward. On the 28th, at 4:35 and 11 p. m., a slight depression existed off the South Atlantic coast, which is numbered X in our list. The tracks of Nos. IX and X are too indefinite to admit of being charted.

No. XI.—The pressure was low in Oregon at 4:35 and 11 p. m. of the 27th, which depression was apparently but a part of that which then prevailed over most of the Rocky Mountain stations. The central lowest pressure was probably at 11 p. m. either in Wyoming or Montana, whence it moved eastward over Dakota and Minnesota and Lake Superior, as a well-marked area, preceded by very warm southerly winds and followed by high northwest winds. At 11 p. m. of the 30th it was probably central over the northeastern portion of Lake Superior. The further history of this storm-centre belongs to July, as it disappeared on the 3rd over the Gulf of St. Lawrence.

Vessels Experiencing Storms at Sea.—1st, N. 49° 29', W. 6° 0', strong WSW. gale and heavy swell. 2d, N. 48° 47', W. 28° 7', strong NW. gale and high sea; N. 49° 27', W. 9° 12', strong SW. gale and heavy rain. 9th, N. 43° 37', W. 47° 12', strong N. and NNW. gale. 12th, east coast of Mexico, severe norther.

TEMPERATURE OF THE AIR.

In General.—The general distribution of temperature for the month is shown by the isotherms on chart No. II. A comparison with the averages for June during the past 7 years shows that the temperatures have been slightly above the average in New England and the South Atlantic States, but slightly below in the St. Lawrence valley, Upper Lake region, Ohio valley and Tennessee and the Lower Missouri valley, and decidedly below in the Upper Mississippi and Missouri valleys and in Minnesota.

Monthly Mean Temperatures, at special points, have been as follows: Mt. Washington, 44°.8; Pike's Peak, 28°.1; Virginia City, 52°.8

Maximum and Minimum Temperatures.—Maximum temperatures above 95° were reported as follows: 96°, Corsicana, Nashville, Shreveport, Washington; 97°, Denison, Augusta, Tybee Island, Wilmington;

98°, St. Marks; 99°, Jacksonville, Norfolk, Savannah; 100°, Mobile, Charleston, Montgomery; 101°, San Antonio; 108°, Rio Grande. Minimum temperatures below 35°: 34°, Bismarck, North Platte; 33°, Santa Fe; 32°, Cheyenne; 30°, Breckenridge; 25°, Mt. Washington; 10°, Pike's Peak. The interval from Friday, June 8th, to Tuesday, June 12th, was marked by excessively high temperatures in southern California—said to have been the highest, in fact, that have been reported since the memorable summer of 1859, when the maximum temperatures for June were, Fort Yuma, 117°, San Diego, 102°, and later in the summer of the same year there were reported, at San Bernardino, 133°, the old placer belt, 117° to 119°. During the present June the maxima have been: Yuma, A. T., 114°, Stanwix, 110°, Maricopa Wells, 110°, Wickenburg, 108°, Camp Verde, 104°, Campo, Tucson, 102°, Phoenix and Florence, 100°, on the 12th; San Francisco, 92°, 11th; San Diego, 93°, 9th; Los Angeles, 101°, 8th; 103°, 9th; 104°, 10th; 112°, 11th; Cajon Rancho, 112°, 9th; 107°, 10th; Holloway's, 105°, 11th; Spring Valley, 111 to 122, 11th; Campo, 101°, 11th; Stanwix, 108, 11th.

Ranges of Temperatures.—The largest diurnal ranges have been: 37°, St. Marks, 2d; 38°, Bismarck, 9th, Virginia City, 15th, and Burlington, Vt., 24th; 39°, Breckenridge, 22d; 40°, Cheyenne, 16th and 27th, Santa Fe, 7th; 41°, Mason, Tex., —; 44°, Denver, 27th. The largest monthly ranges have been: 50°, Dubuque and Omaha; 51°, Alpena; 53°, Bismarck; 55°, Cheyenne; 56°, Denver, Dodge City and Mason; 57°, Santa Fe; 59°, Breckenridge; 61°, North Platte.

Frosts were observed as follows: 1st, Vermont. 2d, Wyoming Ter. 8th, Iowa, Missouri and Texas. 9th, Dakota, Iowa, Minnesota and Nebraska. 10th, Iowa, Texas, (severe.) Minnesota and Nebraska. 11th, New York, Ohio and Virginia. 12th, Minnesota and Vermont. 20th, Maine. 23d, Maine, Michigan, New York, Ohio and Vermont. 30th, entire month at Summit, Colorado.

The formation of *Ice*, rather than frosts, was reported from Rockford, Iowa, on the 10th; Moorehead, Minn., 9th; thin coating of ice formed upon the barrels of water at Camp Sheridan, Neb., 10th, morning; on the 9th, ice formed at Cheyenne and North Platte.

PRECIPITATION.

In General.—The general distribution of rain for June is shown on chart No. III, from which it will be seen that the region of largest rain-fall extends from western Tennessee to Indian Territory and thence northward over Illinois, Iowa and the lower portion of the Ohio valley. Rather heavy rains have also fallen at a few points on the South Atlantic coast. Light rains have fallen in Canada, and almost none in California. This distribution of rain over the country east of the Rocky Mountains may be described as being almost directly the inverse of the distribution for June, 1874. The table of comparative values given on chart No. III shows a very large excess of rain in the South Atlantic States, Tennessee, Upper Mississippi valley, Lower Missouri valley and Minnesota.

Special Heavy Rains.—The following are the most notable cases of heavy rains that have been reported: On the 1st and 2nd at St. Louis 3.32 inches; 4th, Denison, Texas, 2 inches in twenty minutes. 6th, Kingston, R. I., estimated 10 inches; 6th and 7th, New London, 4.37; Independence, Kansas, 2.62 inches in 40 minutes. 7th and 8th, Leavenworth, 3.83. 8th and 9th, Memphis, 13.37. 10th, 11th and 12th, Kittyhawk, 7.33. 11th and 12th, Cape Hatteras, 5.85; Wilmington, 4.86. 11th, 12th and 13th, Smithville, N. C., 4.46; and Jacksonville, 5.73. 12th, Savannah, 4.80; Cape Hatteras, 3.94; Charleston, 3.96. 12th and 13th, Tybee Island, 4.14. 14th, Mobile, 4.37. 19th, 20th and 21st, Keokuk, 3.63. 21st, 22nd and 23rd, St. Marks, 3.08. 29th, Breckenridge, 3.28; St. Paul, 3.48, (of which 2.41 fell in 1 hour.) 30th, Vevay, Ind., at the close of the remarkably violent storm a heavy shower, lasting five minutes, fell from an apparently cloudless sky, drops were of large size, and, as caught on a sheet of blotting paper, made circles 2½ inches in diameter. On the 8th and 9th the rain at Memphis was, at times, a steady pour at the rate of 4 inches per hour; on the same days remarkable rains took place at Helena, Ark.—where, from 2½ p. m. on the 7th to 2 p. m. on the 8th about 12 inches fell, one half of which was lost by the overflow of the gauge, and similarly from 11 p. m. of the 8th to 7 a. m. of the 9th over 11 (and possibly 13) inches fell, one-half being lost by overflow. The entire surrounding country was of course flooded with water in a manner never before known.

Small Monthly Rain-falls.—The following stations report less than 0.5 of an inch; the stations in California and Arizona generally report rain-fall zero or inappreciable; Griffin, Texas, 0.49 inch; Santa Fe 0.13.

Large Monthly Rain-falls.—Rain-falls to the amount of 10 inches or more, were reported as follows: Charleston, S. C., 10.31; Kittyhawk, 10.97; Leavenworth, 10.00; Memphis, 18.16; Fort Snelling, Minn., 10.69; St. Marv's Ga., 11.39; Fort Madison, Iowa, 11.56; Springfield, Mo., 15.20; Helena, Ark., (23?); Urbana, O., 12.34; Bellefontaine, O., 10.91; Cartangena, O., 17.33; Louisburg, O., 10.60; Jackson, Tenn., 12.01.